Operating Fund Proposed Rule:
Computation of Project Expense Level (PEL)

HUD shall calculate PEL based on the Harvard University Graduate School of Design Cost Model (cost model). The cost model is based on a mathematical formula constructed from ten variables. The variables and their definitions are provided in Table 1 below.

Table 1 Harvard Cost Model Variable Definitions

No.	Model Variables	Definition
1	Size	Number of units in a property.
2	Age of Property	Property age measured as the Date of Full Availability (DOFA) for public housing properties, a rough equivalent to the final endorsement date of the first mortgage for FHA properties.
3	Unit Size	The percentage of 2 bedroom, 3 bedroom, and 4 or more bedroom units within a property. This variable includes three separate coefficients.
4	Building Type	The type of buildings located on a property. Building types include walkout, garden style, semi-detached, detached, row/townhouse, and High-rise.
5	Occupancy	Type of clientele a property predominately serves. Clientele types included senior citizens and families.
6	Location	Indicator in which type of community a property is located. Location types include rural, city central metropolitan and non-city central metropolitan (suburban) areas.
7	Neighborhood Poverty Rate	Neighborhood poverty percentage in which a property is located. The data is based on 1990 U.S. Census Population and Housing data.
8	Percent Assisted	Number of units in a property that receive federal assistance. It is assumed to be 100% for all public housing properties.
9	Ownership Type	Legal ownership structure of a FHA property mortgage provider (e.g. non-profit, for profit, limited dividend). A non-profit ownership structure is assumed for all public housing properties.
10	Geographic Area	Geographic location of a property. Geographic areas are organized by rural and metropolitan areas of both U.S. state and region. **Note**: the geographic coefficient is an interaction of the geographic variable and ownership type variable.

The following steps describe the process by which HUD will calculate each PHA's project PEL and are similar to the steps outlined in "Chapter 2: Model Estimates" of the Harvard Cost Study.

Step 1: For a given property, determine the proper coefficients for each of the ten (10) variables, from which the cost model is constructed. The proper variable coefficients are dependent on the physical, demographic and geographic characteristics of a property. The coefficient to be applied for each variable depending on property characteristics is shown in Table 2 below:

Table 2 Cost Model Variables and Coefficients

Size

Property Characteristic	Coefficient
Less than 150 Units	0.00%
More than 149 Units	-1.47%

Age of Property

Propery Characteristic	Coefficient
0 to 8 years	0.00%
9 years	0.29%
10 years	0.57%
11 years	0.86%
12 years	1.15%
13 years	1.43%
14 years	1.72%
15 years	2.01%
16 years	2.30%
17 years	2.58%
18 years	2.87%
19 years	3.64%
20 years	4.41%
21 years	5.18%
22 years	5.95%
23 years	6.72%
24 years	7.32%
25 years	7.92%
26 years	8.53%
27 years	9.13%
28 or more years	9.73%

Unit Size

Property Characteristic	Coefficient
Percentage of 2 Bedroom Units	17.61%
Percentage of 3 Bedroom Units	37.65%
Percentage of 4 or more Bedroom Units	48.73%

Building Type

Property Characteristic	Coefficient
Walkup/Garden	0.00%
Detached/Semi-Detached	-2.01%
Row/Townhouse	-0.23%
High-Rise/Mixed	-0.21%

Occupancy

Property Characteristic	Coefficient
Family	0.00%
Senior	-5.83%

Location

Property Characteristic	Coefficient
Rural	0.00%
Central City	2.55%
Suburban	0.00%

Neighborhood Poverty Rate

Property Characteristic	Coefficient
0 to 20%	0.00%
20 to 30%	2.13%
30 to 40%	4.30%
More than 40%	6.60%

Percent Assisted

Property Characteristic	Coefficient
100% (Assumed for all properties)	6.39%

Ownership Type

Property Characteristic	Coefficient
Non-Profit (Assumed for all properties)	10.00%

Source: Table 2 of Harvard Cost Study (page 6).

Note: Table 2 does not include geographic coefficients, which may be obtained from the HUD Operating Fund Program Office.

Step 2: Sum the coefficient values identified in step 1 for the following eight (8) variables.

- *Size*
- *Age of Property*
- *Building Type*
- *Occupancy*
- *Location*
- *Neighborhood Poverty Rate*
- *Percent Assisted*
- *Geographic Region*

Step 3: Multiply the PHA's percentage of 2 bedroom units by 17.61%, multiply the PHA's percentage of 3 bedroom units by 37.65%, and multiply the PHA's percentage of 4 or more bedroom units by 48.73%. Sum the three calculated values.

Step 4: Add the result of steps 2 and 3 to 520.18%[1].

Step 5: Take the exponent of the result of step 4. In MS Excel, the formula is *EXP(sum of coefficients)*. For example, the exp(575.6%)=$316.08.

Step 6: Multiply the result of step 5 by one plus the coefficient value of the *Ownership Type* variable or equivalently 104 percent (i.e., the non-profit adjustment).

Step 7: If the final result of step 6 is greater than $325, reduce the result by 4% but limited to $325. If the project is owned by the New York City Housing Authority, do not apply step 7.

Step 8: Apply the following out-of-model adjustments, if necessary:

- If the result of step 7 is less than $200 and the project *Occupancy* type is identified as senior, raise the PEL level to $200.
- If the result of step 7 is less than $215 and the project *Occupancy* type is identified as family, raise the PEL level to $215.
- If the result of step 7 is greater than $420 and the project is not owned by the New York City Housing Authority, decrease the PEL to $420.
- If the result of step 7 is greater than $480 and the project is owned by the New York City Housing Authority, decrease the PEL to $480.

Step 9: Inflate the result of step 9 from a base year value of FY 2000 to a base year value of FY 2004. FY 2004 PEL is the product of the following:

a) FY 2001 Local Inflation Factor (Line A6 of HUD Form 52723)
b) FY 2002 Local Inflation Factor (Line A6 of HUD Form 52723)
c) FY 2003 Local Inflation Factor (Line A6 of HUD Form 52723)

Step 10: Subtract the PUM cost of audit expenses for the project from step 10.

[1] 520.18% is equal to the cost model intercept of 518.7% and the root mean squared error of the coefficients of 1.48%.